

# Selected Abstracts from the July Issue of the European Journal of Vascular and Endovascular Surgery

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## An Optimal Combination for EVAR: Low Profile Endograft Body and Continuous Spiral Stent Limbs

Couchet G., Maurel B., Sobocinski J., Hertault A., Le Roux M., Azzaoui R., Haulon S. *Eur J Vasc Endovasc Surg* 2013;46:29-33.

**Aim:** To evaluate the outcomes of EVAR performed with a new generation of bifurcated endografts and limbs.

**Methods:** Prospectively collected data from fifty consecutive patients with abdominal aortic aneurysms (AAA) treated at our institution with a Low Profile Zenith® bifurcated body/Zenith® Spiral-Z legs combo were analysed. AngioCT scans and Ultrasound exams were performed prior to discharge. Ultrasound examination was repeated 6 months after the procedure to assess endograft patency and to depict endoleaks.

**Results:** Median age was 70.6 years [50-88] and median ASA score was 3 [2-4]. Median aortic diameter was 56B mm [49-81]. Of the 100 external iliac access vessels, 14 had a diameter of 6 mm or lower. All endografts were successfully implanted. Post-operative Ultrasound examination and angioCT scan depicted both 1 type Ia, and 10 and 19 type 2 endoleaks respectively. An asymptomatic thrombosis of the left external iliac artery distal to the endograft limb was also depicted. 30-day mortality rate was 0%. Two patients died respectively three and four months after EVAR. Both deaths were not aneurysm related. All patients underwent an ultrasound exam 6-12 months after EVAR. All endografts main bodies and limbs were patent. Five endoleaks were depicted, all were type II endoleaks (the early type Ia endoleak had sealed spontaneously; it was confirmed by an angioCT scan). One patient presented a significant stenosis of the left iliac limb at the level of a narrow and calcified aortic bifurcation. It was successfully treated by bilateral iliac angioplasty and kissing balloon stenting.

**Conclusions:** EVAR performed with the Zenith LP main body in combination with Spiral-Z Iliac Legs is safe and effective. No limb occlusions were diagnosed at the 6 month follow up even in challenging iliac anatomies usually considered as contra indications for EVAR. Our first results are most satisfying and calling to be completed by a longer follow up.

## Outcomes After Elective Aortic Aneurysm Repair: A Nationwide Danish Cohort Study 2007-2010

de la Motte L., Jensen L.P., Vogt K., Kehlet H., Schroeder T.V., Lonn L. *Eur J Vasc Endovasc Surg* 2013;46:57-64.

**Objective:** To assess outcomes after treatment for asymptomatic abdominal aortic aneurysm (AAA) in Denmark in a period when both open surgery (OR) and endoluminal repair (EVAR) have been routine procedures.

**Methods:** We performed a retrospective nationwide cohort study of patients treated for asymptomatic AAA between 2007 and 2010. Data on demographics, procedural data, perioperative complications, length of stay (LOS), 30-day reinterventions and readmissions, late aneurysm and procedure-related complications and mortality were obtained from the Danish Vascular Registry and the Danish National Patient Register.

**Results:** 525 EVAR and 1176 OR for asymptomatic AAA were identified. LOS was shorter after EVAR than OR (4 vs 7 days,  $P < .001$ ). During primary hospitalization procedure-related complications (12% vs 6%) and general complications (21% vs 8%) were more common after OR than EVAR ( $P < 0.001$ ). The 30-day reintervention rate was higher for OR than EVAR (18% vs 6%,  $P < 0.001$ ), but there was no difference in readmissions within 30 days. During follow-up (mean  $29 \pm 15$  months) aneurysm-related complications after EVAR were outweighed by procedure-related complications after OR.

**Conclusion:** Elective AAA repair in Denmark is overall comparable with international results and both perioperative and late outcomes after EVAR of elective AAA are better than the results after OR.

## EVAR Deployment in Anatomically Challenging Necks Outside the IFU

Lee J.T., Ullery B.W., Zarins C.K., Olcott C. IV, Harris E.J. Jr., Dalman R.L. *Eur J Vasc Endovasc Surg* 2013;46:65-73.

**Objective:** Treatment of abdominal aortic aneurysms with high-risk anatomy (neck length  $<10$ -15 mm, neck angle  $>60^\circ$ ) using commercially available devices has become increasingly common with expanding

institutional experience. We examined whether placement of approved devices in short angled necks provides acceptable durability at early and intermediate time points.

**Methods:** A total of 218 patients (197 men, 21 women) at a single academic center underwent endovascular aneurysm repair (EVAR) with a commercially available device between January 2004 and December 2007. Available medical records, pre- and postoperative imaging, and clinical follow-up were retrospectively reviewed. Patients were divided into those with suitable anatomy (instructions for use, IFU) for EVAR and those with high-risk anatomic aneurysm characteristics (non-IFU).

**Results:** IFU ( $n = 143$ ) patients underwent repair with Excluder (40%), AneuRx (34%), and Zenith (26%) devices, whereas non-IFU ( $n = 75$ ) were preferentially treated with Zenith (57%) over Excluder (25%) and AneuRx (17%). Demographics and medical comorbidities between the groups were similar. Operative mortality was 1.4% (2.1% IFU, 0% non-IFU) with mean follow-up of 35 months (range 12-72). Non-IFU patients tended to have larger sac diameters ( $46.7\% \geq 60$  mm) with shorter ( $30.7\% \leq 10$  mm), conical (49.3%), and more angled ( $68\% > 60^\circ$ ) necks (all  $P < .05$  compared with IFU patients). Operative characteristics revealed that the non-IFU patients were more likely to be treated utilizing suprarenal fixation devices, to require placement of proximal cuffs (13.3% vs 2.1%,  $P = .003$ ), and needed increased fluoroscopy time (31 vs 25 minutes,  $P = .02$ ). Contrast dose was similar between groups (IFU = 118 mL, non-IFU = 119 mL,  $P = .95$ ). There were no early or late surgical conversions. Rates of migration, endoleak, need for reintervention, sac regression, and freedom from aneurysm-related death were similar between the groups ( $P > .05$ ).

**Conclusions:** EVAR may be performed safely in high-risk patients with unfavorable neck anatomy using particular commercially available endografts. In our experience, the preferential use of active suprarenal fixation and aggressive use of proximal cuffs is associated with optimal results in these settings. Mid-term outcomes are comparable with those achieved in patients with suitable anatomy using a similar range of EVAR devices. Careful and mandatory long-term follow-up will be necessary to confirm the benefit of treating these high-risk anatomic patients.

## Centerline is Not as Accurate as Outer Curvature Length to Estimate Thoracic Endograft Length

Kaladji A., Spear R., Hertault A., Sobocinski J., Maurel B., Haulon S. *Eur J Vasc Endovasc Surg* 2013;46:82-6.

**Background:** To assess the accuracy of the aortic outer curvature length for thoracic endograft planning.

**Methods:** Seventy-four patients (58 men,  $66.4 \pm 14$  years) who underwent thoracic endovascular aortic repair between 2009 and 2011 treated with a Cook Medical endograft were enrolled in this retrospective study. Immediate postoperative CT scans were analysed using EndoSize software. Three vessel lengths were computed between two fixed landmarks placed at each end of the endograft: the straightline (axial) length, the centerline length and the outer curvature length. A tortuosity index was defined as the ratio of the centerline length/straightline length. A Student  $t$  test and a Pearson correlation coefficient were used to examine the results.

**Results:** We found a significant difference between the centerline length ( $135.4 \pm 24$  mm) and that of the endograft ( $160 \pm 29$  mm) ( $P < .0001$ ). This difference correlates with the tortuosity index ( $r = .818$ ,  $P < .0001$ ), the endograft length ( $r = .587$ ,  $P < .0001$ ), and the diameter of the endograft ( $r = .53$ ,  $P < .0001$ ). However, the outer curvature length ( $161.3 \pm 29$  mm) and the endograft length ( $160 \pm 29$  mm) were similar ( $P = .792$ ).

**Conclusion:** The outer curvature length more accurately reflects that of the deployed endograft and may prove more accurate than centerlines in planning thoracic endografts.

## Perioperative Haemorrhage in Endovascular Abdominal Aneurysm Repair Affects Outcome

Montán C., Wannberg M., Holst J., Wahlgren C.M. *Eur J Vasc Endovasc Surg* 2013;46:87-92.

**Objective:** This study aimed to evaluate the outcome and predisposing factors related to perioperative bleeding in patients treated with